MediaLB Analyzer

User Manual
For
MediaLB Monitor USB
Active-Pod MediaLB 3-Pin LS
Active-Pod MediaLB 3-Pin HS
Active-Pod MediaLB 6-Pin HS

UM_MediaLB_Analyzer_V02_00_XX-3
Mar. 2010

MOST®
Media **O**riented **S**ystems **T**ransport

Multimedia and Control Networking Technology

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Legend

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User Manual Versions

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1 Preface

1.1 Intended Use

This SMSC product is intended to be used for developing, testing or analyzing MediaLB and MOST based multimedia products and systems by persons with experience in developing multimedia devices.

The operation of this SMSC product is only admitted with original SMSC devices, e.g., provided power supply.

Do not interfere in the product's original state, otherwise user safety, faultless operation and electromagnetic compatibility is not guaranteed.

1.2 Information Sources

- MediaLB Analyzer User Manual (this document):
  Describes the MediaLB Monitor and the MediaLB Active-Pods
- OptoLyzer Suite Start-up Guide [1]:
  Describes in a brief manner how to connect the hardware components of the MediaLB Analyzer and how to install the OptoLyzer Suite supporting MediaLB signal/data analysis and verification
- OptoLyzer Suite Online Help [2]:
  Describes the software usage in detail
- Media Local Bus Specification [3]:
  Defines the MediaLB Physical-Layer and Link-Layer Protocol

1.3 Terms and Definitions

For better understanding of the following sections, the table below explains special terms used within this user manual.

Term	Definition
Active-Pod	Part of the MediaLB Analyzer. It is a small housing that is directly connected to the MediaLB Debug Header of the DUT. It buffers the MediaLB signals and transfers them to the MediaLB Monitor.
DUT	Device Under Test
INIC	Intelligent Network Interface Controller
LED	Light Emitting Diode
LVTTL	Low Voltage Transistor to Transistor Logic
MediaLB	Media Local Bus
MediaLB Monitor	Part of the MediaLB Analyzer. It formats, processes and buffers the incoming serial data before feeding it via USB to the Host PC.
S/PDIF	Sony Philips Digital Interface
Trigger	A hardware trigger defines when to capture data from MediaLB.

Table 1-1: Terms and Definitions

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2 Introduction

MediaLB Analyzer is a tool defined by a combination of hardware and software components designed to observe and visualize MediaLB data in a comfortable way.

MediaLB Analyzer consists of the following main modules:

Hardware Modules

- MediaLB Monitor USB - converter box transferring MediaLB data received from the Active-Pods via USB 2.0 to a Host PC (described in Chapter 3). It represents a package of the MediaLB Monitor **(3)** converter box, cables required to setup a MediaLB Analyzer, power supply and user manual.
- Active-Pods **(2)** - functioning as interface to the MediaLB port of the Device Under Test **(1)** (described in Chapter 4)

Software Module

- OptoLyzer Suite **(6)** - software, which supports analysis and visualization of MediaLB data (see separate OptoLyzer Suite documentation for details). OptoLyzer Suite is running on a Host PC/laptop **(5)**. The USB connector on the PC has to be a USB 2.0 Hi-Speed connector **(4)**.

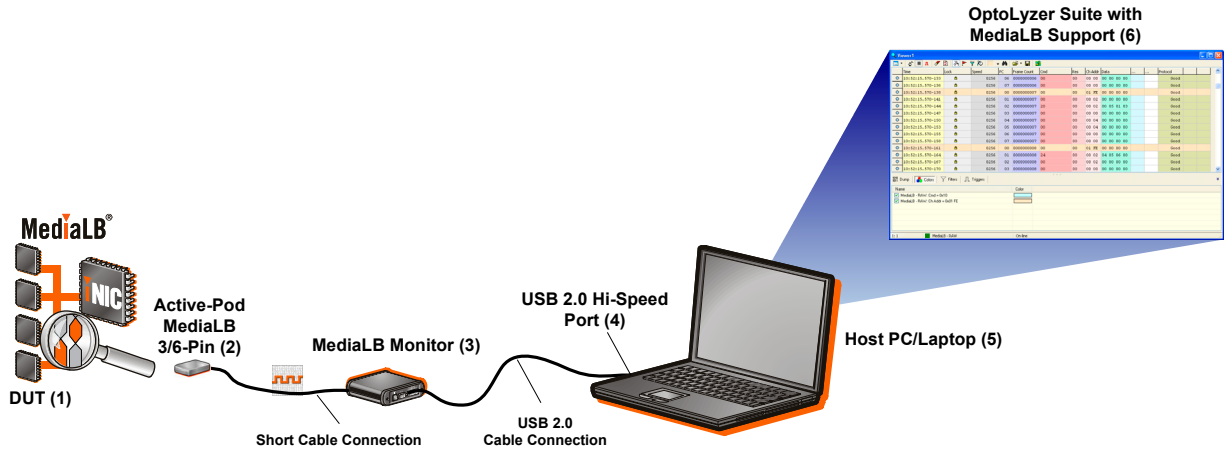

Figure 2-1: MediaLB Analyzer Setup

All components of the MediaLB Analyzer including the MediaLB Monitor USB, the Active-Pods and the OptoLyzer Suite software need to be purchased to complete a MediaLB Analyzer setup. Active-Pods have to be purchased dependent on the MediaLB interface (3-Pin or 6-Pin) to be analyzed and the MediaLB Debug Header connector (LS or HS) used.

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2.1 Features

The MediaLB Analyzer hardware modules provide the following features:

- MediaLB Monitor
  - Streaming capable USB 2.0 Hi-Speed interface
  - MediaLB Clock-Activity, Speed and Lock detection
  - 256 MByte RAM for data buffering
  - Compact housing
  - High-speed trigger input

- Active-Pods
  - Active-Pod MediaLB 3-Pin LS
    - Support for OS81050/OS81082/OS81110 LS MediaLB Debug Header
    - Support for MediaLB 3-Pin interfaces up to and including 1024Fs
  - Active-Pod MediaLB 3-Pin HS
    - Support for OS81050/OS81082/OS81110 HS MediaLB Debug Header
    - Support for MediaLB 3-Pin interfaces up to and including 1024Fs
  - Active-Pod MediaLB 6-Pin HS
    - Support for OS81110 HS MediaLB Debug Header
    - Support for MediaLB 6-Pin interfaces up to and including 8192Fs

2.2 Scope of Delivery

The MediaLB Monitor USB is delivered with:

- MediaLB Monitor
- Power supply
- Cables (USB, Active-Pod)
- MediaLB Analyzer User Manual (this document)

Dependent on the Active-Pod required, the package can contain one of the below listed parts:

- Active-Pod MediaLB 3-Pin LS
- Active-Pod MediaLB 3-Pin HS
- Active-Pod MediaLB 6-Pin HS

Check your shipment for completeness.

If you have any complaints direct them to sales-ais-europe@smsc.com (Europe and Asia) or to sales-ais-usa@smsc.com (America). Providing the delivery note number eases the handling.

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3 MediaLB Monitor

The MediaLB Monitor formats, processes and buffers the incoming serial data before feeding it via USB to the Host PC.

3.1 Front Panel

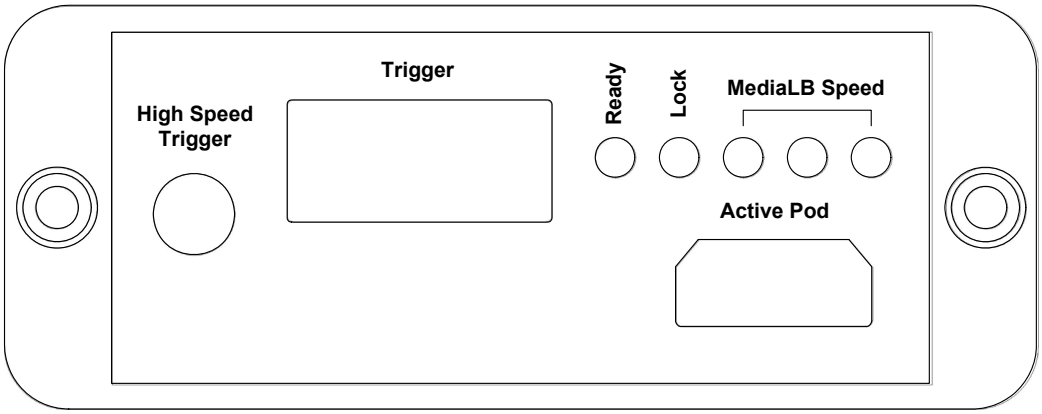
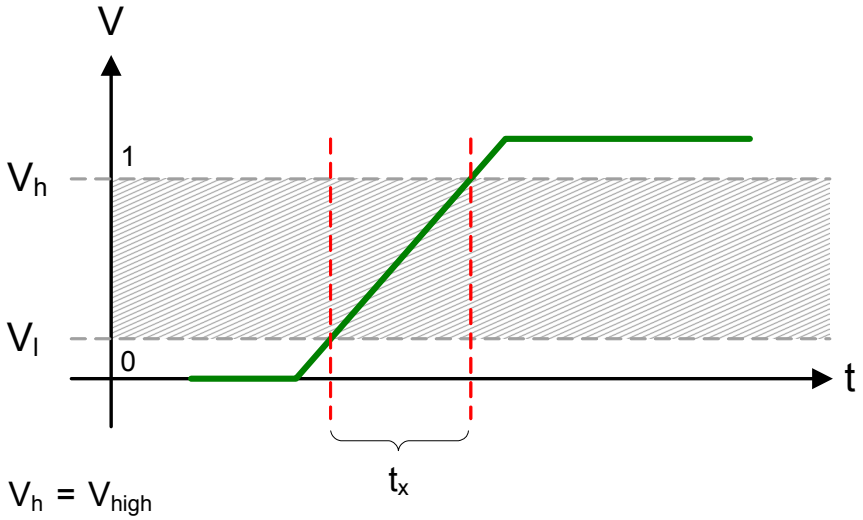


Figure 3-1: MediaLB Monitor—Front Panel

3.1.1 High-Speed Trigger

High-speed trigger connector is an SMA jack type connector accepting an LVTTL-compatible input. It can be used to trigger on external events. The trigger event is generated upon the transition of logical low-level to logical high-level. For details about characteristic values refer to Section 3.3.3 on page 17.



$V_h = V_{high}$
$V_l = V_{low}$
t_x = Trigger uncertainty

Figure 3-2: MediaLB Monitor—High-Speed Trigger Characteristics

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3.1.2 Trigger

Will be activated in a later version of MediaLB Monitor.

3.1.3 Ready LED

Color of LED	Status		Description
Green	On		Indicates the MediaLB Monitor is powered and ready for operation.
Red	Blinking	Shortly	Indicates the MediaLB Monitor is booting.
		Continuously	Indicates booting cannot be completed. Refer to: Possible reasons for a red Ready LED that is blinking continuously:
	On		Indicates an error is occurred. Refer to: Possible reasons for a red Ready LED:

Table 3-1: MediaLB Monitor—Ready LED

Possible reasons for a red Ready LED that is blinking continuously:

Reason	Action
OptoLyzer Suite is not yet started.	Start OptoLyzer Suite.
MediaLB Monitor device is not yet added in the OptoLyzer Suite.	Add MediaLB Monitor device. Refer to the online help of the OptoLyzer Suite for details.

Table 3-2: MediaLB Monitor—Red Ready LED Blinks Continuously

Possible reasons for a red Ready LED:

Reason	Action
If the PC runs too slow for processing all MediaLB data, the buffer eventually will get an overflow. This can occur after some seconds to minutes (depending on the transmitted load).	Set the ‘Memory Depth’ on tab ‘License/Memory/MOST Speed’ to 100000 (default).
	Use dedicated filters to focus only on the data of interest.
	Check the PC system requirements. Refer to the OptoLyzer Suite’s online help.
User stops streaming of data by clicking the Stop button of the MediaLB Monitor device in the OptoLyzer Suite.	Click the Run button of the MediaLB Monitor device in the OptoLyzer Suite.
MediaLB Monitor USB driver is not installed or not loaded properly.	Consider reinstallation of the OptoLyzer Suite.

Table 3-3: MediaLB Monitor—Red Ready LED

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3.1.4 Lock LED

Color of LED	Description
Green	Indicates a MediaLB lock state
Red	Indicates there is no MediaLB lock but toggling (activity) of MediaLB clock pin.
Dark	Indicates there is no MediaLB lock and no toggling (activity) of MediaLB clock pin.

Table 3-4: MediaLB Monitor—Lock LED

3.1.5 MediaLB Speed

The yellow LEDs indicate the MediaLB speed. In the table below they are listed from left to right.
'●' means LED is off, '❍' means LED is on.

MediaLB Speed	
LEDs	**Fs**
●●●	256, only if Lock LED is on
●●❍	512
●❍●	1024
●❍❍	2048
❍●●	3072
❍●❍	4096
❍❍●	6144
❍❍❍	8192

Table 3-5: MediaLB Monitor—MediaLB Speed

3.1.6 Active-Pod Connector

The Active-Pod connector has to be connected to the respective Active-Pod using the Active-Pod cable.

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3.2 Rear Panel

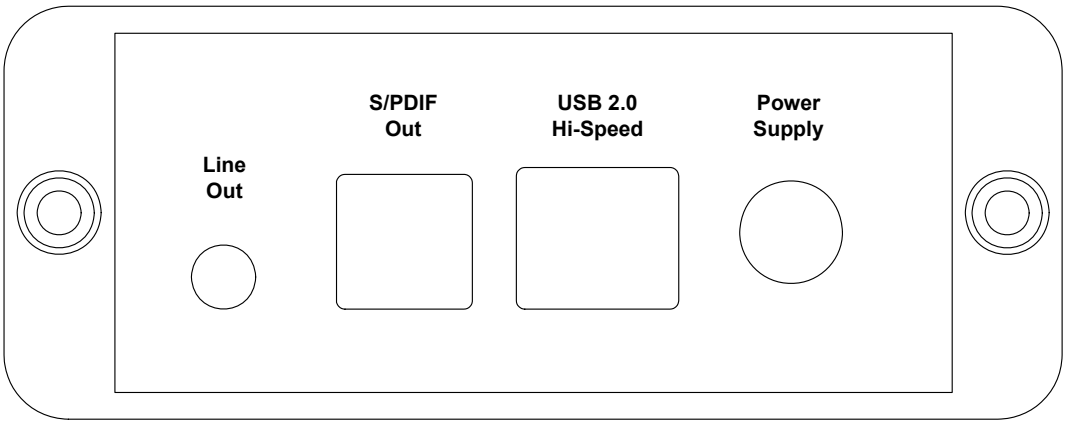

Figure 3-3: MediaLB Monitor—Rear Panel

3.2.1 Line Out

Will be activated in a later version of MediaLB Monitor.

3.2.2 S/PDIF Out

Will be activated in a later version of MediaLB Monitor.

3.2.3 USB 2.0 Hi-Speed Connector

Type: USB type B connector

Notice

It is mandatory to connect this connector with a **USB 2.0 Hi-Speed connector on the PC**! Check, if a USB connector of your PC system provides USB 2.0 Hi-Speed capability. If so, the Device Manager will show an *Enhanced* USB Host Controller for this connector.

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3.2.4 Power Supply

Type: Binder, serial 718

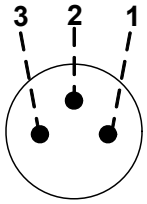

Figure 3-4: MediaLB Monitor—Power Connector (Rear Panel)

The table shows the pin assignment of the power connector.

Pin	Description
1	Power
2	Reserved
3	GND

Table 3-6: MediaLB Monitor—Pin Assignment of Power Supply Connector

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3.3 Specifications

3.3.1 Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
Power supply voltage	-0.4	25	V
MediaLB signal voltage	-0.4	3.7	V
Operating (ambient) temperature	0	40	°C
Storage temperature	-20	85	°C

Table 3-7: MediaLB Monitor—Absolute Maximum Ratings

3.3.2 Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Unit
Operating (ambient) temperature	-	21	-	°C
Power supply	-	12	-	V

Table 3-8: MediaLB Monitor—Recommended Operating Conditions

3.3.3 DC Characteristics

Parameter	Condition	Min.	Typ.	Max.	Unit
Power consumption	Power supply voltage = 12 V	50	150	300	mA
High-speed Trigger input voltage: low		0	-	0.8	V
High-speed Trigger input voltage: high		2	-	3.3	V
High-speed Trigger input capacitance		-	20	-	pF
Line out (RLoad)	Will be activated in a later version of MediaLB Monitor.				
High-speed Trigger output voltage (high/low-level)					

Table 3-9: MediaLB Monitor—DC Characteristics

3.3.4 Mechanical Characteristics

Protection Rating:	IP 42	
Dimensions:	MediaLB Monitor:	113 / 82 / 32 mm (l / w / h)
	USB cable:	1 m
	Active-Pod cable:	40 cm

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4 Active-Pods

An Active-Pod is a small device that is directly connected to the MediaLB Debug Header of the DUT. It buffers the MediaLB signals and transfers them to the MediaLB Monitor without compromising the signal integrity.

4.1 Active-Pod MediaLB 3-Pin LS

An Active-Pod MediaLB 3-Pin LS has three connectors: Two MediaLB connectors (MediaLB Connector A and MediaLB Connector B), which are used to connect the Active-Pod to the MediaLB on the DUT and one Active-Pod Connector, which is used to connect the Active-Pod by means of a special cable to the MediaLB Monitor. Note, the cable is part of the MediaLB Monitor USB delivery.

MediaLB Connector A is a 10-pin male type, 2 mm pitch connector. It is placed on the front side of the Active-Pod. This connector is used to connect the Active-Pod by means of an extension connector to the DUT.

MediaLB Connector B is a 10-pin female type, 2 mm pitch connector placed on the bottom side of the Active-Pod. This connector is used to connect the Active-Pod directly (or by means of an extension connector) on the dedicated connector on the DUT.

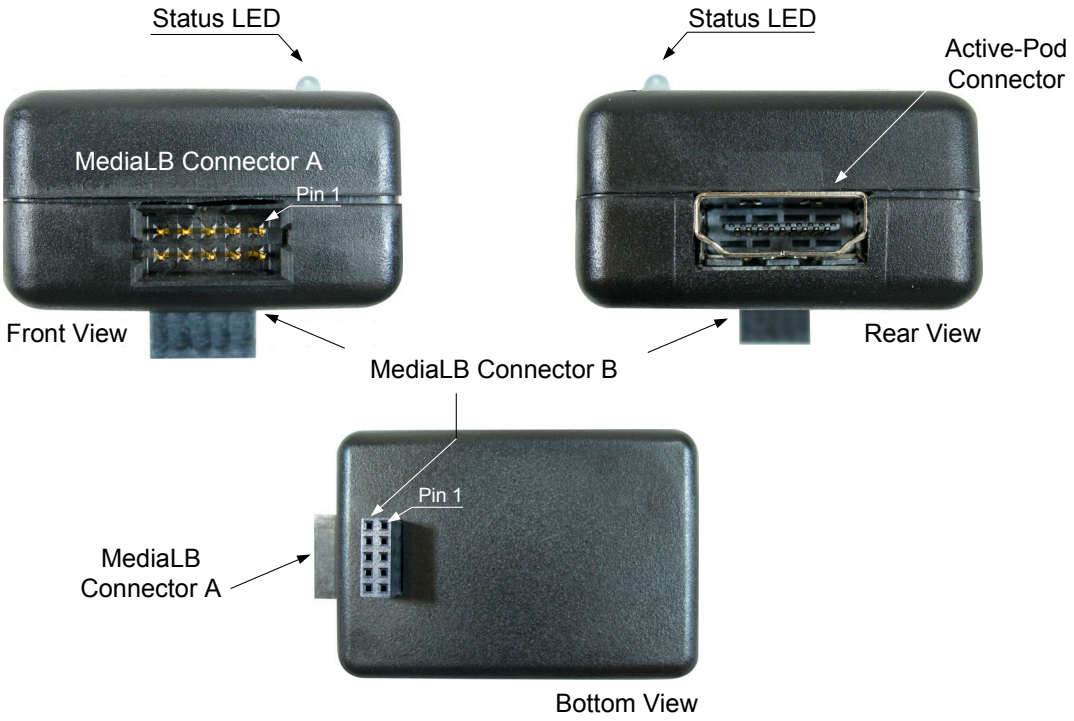

Figure 4-1: Active-Pod MediaLB 3-Pin LS—Connectors and Status LED

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4.1.1 MediaLB Connector A and MediaLB Connector B Pin-Out

MediaLB Connectors A and B are electrically one-to-one interconnected, so that the corresponding pins have the same functionality (pin 1 of MediaLB Connector A ⇔ pin 1 of MediaLB Connector B).

Notice

All pins are inputs (except GND) and are named according to the corresponding pins of the MediaLB Debug Header.

GND	GND	DUT Detection*)	GND	GND
Pin 9	Pin 7	Pin 5	Pin 3	Pin 1
Pin 10	Pin 8	Pin 6	Pin 4	Pin 2
n.c.	n.c.	MLBDAT	MLBSIG	MLBCK

*) On DUT this pin has to be connected to GND.

Table 4-1: Active-Pod MediaLB 3-Pin LS—Connector A & B Pin-Out

4.1.2 Status LED

The following table gives an overview of the possible LED states.

Status LED	Description	Action
Dark	MediaLB Monitor is not connected to the Active-Pod.	Check the connection.
	MediaLB Monitor has no power.	Check the power supply/USB.
Red	MediaLB Monitor has no connection to MediaLB.	Check the connection.
	The DUT detection pin* on the DUT is not connected to ground.	Check the pin assignment of the detection pin.
Yellow	MediaLB connector A or B is connected properly to MediaLB, but the MediaLB provides no clock signal.	Make sure, MediaLB is initialized and running.
Green	MediaLB clock is present.	Normal operation

* Since the DUT detection pin detects the connection to MediaLB, it is important that pin 5 of the DUT is connected to ground.

Table 4-2: Active-Pod MediaLB 3-Pin LS—Status LED Interpretation

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4.1.3 Specifications

4.1.3.1 Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
MediaLB signal voltage	-0.4	3.7	V
Operating (ambient) temperature	0	40	°C
Storage temperature	-20	85	°C

Table 4-3: Active-Pod MediaLB 3-Pin LS—Absolute Maximum Ratings

4.1.3.2 Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Unit
Operating (ambient) temperature	-	21	-	°C

Table 4-4: Active-Pod MediaLB 3-Pin LS—Recommended Operating Conditions

4.1.3.3 DC Characteristics

Parameter	Min.	Typ.	Max.	Unit
Input resistance	100	-	-	kΩ
Input capacitance	5	6	10	pF
Input high voltage	1.70	-	3.6	V
Input low voltage	-0.3	-	0.70	V

Table 4-5: Active-Pod MediaLB 3-Pin LS—DC Characteristics

4.1.3.4 Mechanical Characteristics

- Protection Rating: IP 42
- Dimensions: Active-Pod: 56 / 37 / 25 mm (l / w / h)
  Active-Pod cable: 40 cm

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4.2 Active-Pod MediaLB 3-Pin HS

An Active-Pod MediaLB 3-Pin HS has two connectors: one MediaLB Connector, which is used for connecting the Active-Pod to the MediaLB on the DUT and one Active-Pod Connector, which is used to connect the Active-Pod by means of a special cable to the MediaLB Monitor. The cable is part of the MediaLB Monitor USB delivery.

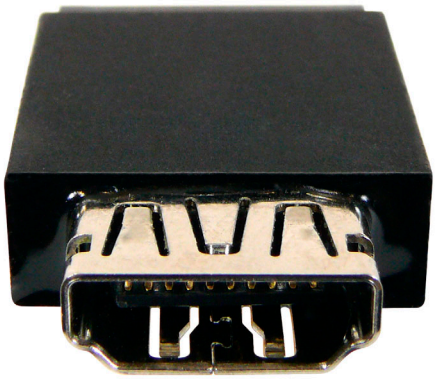

Figure 4-2: Active-Pod MediaLB 3-Pin HS—Active-Pod Connector

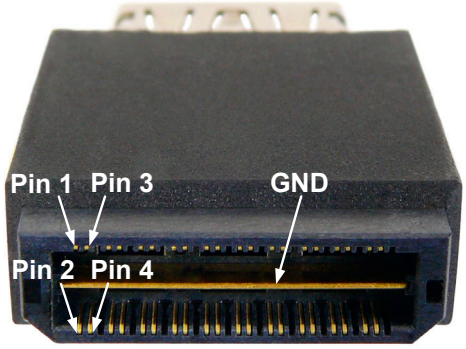

Figure 4-3: Active-Pod MediaLB 3-Pin HS—MediaLB Connector

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4.2.1 MediaLB Connector Pin-Out

The MediaLB Connector of type QTH-020-01-L-D-DP-A (Samtec) is a 40-pin connector having a GND stripe in the middle. It is placed on the front side of the Active-Pod. This connector is used for connecting the Active-Pod by means of an extension connector to the DUT.

The DUT connector should be of type QSH-020-01-L-D-DP-A (Samtec).

																n.c.**)	n.c.**)	DUT Detection*)	DUT Detection*)
Pin 1	Pin 3	Pin 5	Pin 7	Pin 9	Pin 11	Pin 13	Pin 15	Pin 17	Pin 19	Pin 21	Pin 23	Pin 25	Pin 27	Pin 29	Pin 31	Pin 33	Pin 35	Pin 37	Pin 39
GND																			
Pin 2	Pin 4	Pin 6	Pin 8	Pin 10	Pin 12	Pin 14	Pin 16	Pin 18	Pin 20	Pin 22	Pin 24	Pin 26	Pin 28	Pin 30	Pin 32	Pin 34	Pin 36	Pin 38	Pin 40
MLBCK		MLBSIG		MLBDAT															

*) On DUT this pin has to be connected to 3.3 VCC.

**) For future use. Do not connect these pins.

Figure 4-4: Active-Pod MediaLB 3-Pin HS—Pin-Out MediaLB Connector

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4.2.2 Specifications

4.2.2.1 Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
MediaLB signal voltage	-0.4	3.7	V
Operating (ambient) temperature	0	40	°C
Storage temperature	-20	85	°C

Table 4-6: Active-Pod MediaLB 3-Pin HS—Absolute Maximum Ratings

4.2.2.2 Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Unit
Operating (ambient) temperature	-	21	-	°C

Table 4-7: Active-Pod MediaLB 3-Pin HS—Recommended Operating Conditions

4.2.2.3 DC Characteristics

Parameter	Min.	Typ.	Max.	Unit
Input resistance	100	-	-	kΩ
Input capacitance	5	6	10	pF
Input high voltage	2	-	3.45	V
Input low voltage	-0.15	-	0.8	V

Table 4-8: Active-Pod MediaLB 3-Pin HS—DC Characteristics

4.2.2.4 Mechanical Characteristics

- Protection Rating: IP 42
- Dimensions: Active-Pod: 35 / 22 / 8 mm (l / w / h)
  Active-Pod cable: 40 cm

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4.3 Active-Pod MediaLB 6-Pin HS

An Active-Pod MediaLB 6-Pin HS has two connectors: one MediaLB Connector, which is used for connecting the Active-Pod to the MediaLB on the DUT and one Active-Pod Connector, which is used to connect the Active-Pod by means of a special cable to the MediaLB Monitor. The cable is part of the MediaLB Monitor USB delivery.

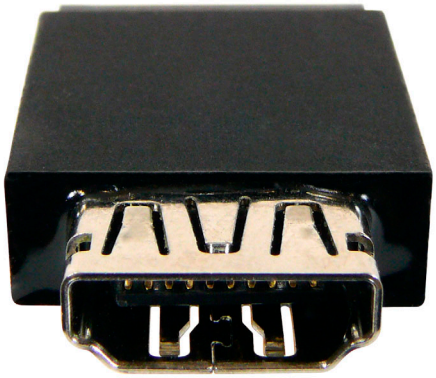

Figure 4-5: Active-Pod MediaLB 6-Pin HS—Active-Pod Connector

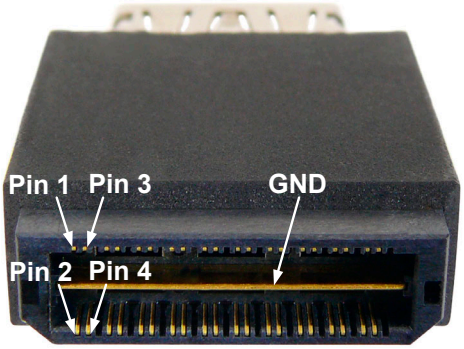

Figure 4-6: Active-Pod MediaLB 6-Pin HS—MediaLB Connector

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4.3.1 MediaLB Connector Pin-Out

The MediaLB Connector of type QTH-020-01-L-D-DP-A (Samtec) is a 40-pin connector having a GND stripe in the middle. It is placed on the front side of the Active-Pod. This connector is used for connecting the Active-Pod by means of an extension connector to the DUT.

The DUT connector should be of type QSH-020-01-L-D-DP-A (Samtec).

MLBSN	MLBSP			MLBDN	MLBDP			MLBCKN	MLBCKP										DUT Detection*)
Pin 1	Pin 3	Pin 5	Pin 7	Pin 9	Pin 11	Pin 13	Pin 15	Pin 17	Pin 19	Pin 21	Pin 23	Pin 25	Pin 27	Pin 29	Pin 31	Pin 33	Pin 35	Pin 37	Pin 39
GND																			
Pin 2	Pin 4	Pin 6	Pin 8	Pin 10	Pin 12	Pin 14	Pin 16	Pin 18	Pin 20	Pin 22	Pin 24	Pin 26	Pin 28	Pin 30	Pin 32	Pin 34	Pin 36	Pin 38	Pin 40

*) On DUT this pin has to be connected to 3.3 VCC.

Figure 4-7: Active-Pod MediaLB 6-Pin HS—Pin-Out MediaLB Connector

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4.3.2 Specifications

4.3.2.1 Absolute Maximum Ratings

Parameter	Min.	Max.	Unit
MediaLB signal voltage	-0.4	3.7	V
Operating (ambient) temperature	0	40	°C
Storage temperature	-20	85	°C

Table 4-9: Active-Pod MediaLB 6-Pin HS—Absolute Maximum Ratings

4.3.2.2 Recommended Operating Conditions

Parameter	Min.	Typ.	Max.	Unit
Operating (ambient) temperature	-	21	-	°C

Table 4-10: Active-Pod MediaLB 6-Pin HS—Recommended Operating Conditions

4.3.2.3 DC Characteristics

Parameter	Min.	Typ.	Max.	Unit
Input resistance	50	-	-	kΩ
Input capacitance	3	5	8	pF
Input common voltage	0.05	-	2.35	V
Input differential threshold	-	±7	±50	mV

Table 4-11: Active-Pod MediaLB 6-Pin HS—DC Characteristics

4.3.2.4 Mechanical Characteristics

- Protection Rating: IP 42
- Dimensions: Active-Pod: 35 / 22 / 85 mm (l / w / h)
  Active-Pod cable: 40 cm

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Appendix B: Revision History

Version	Date	Section	Description of Changes
UM_MediaLB_Analyzer_V02_00_XX-3	Mar. 2010	General	Reworked document
		Section 4.2	Active-Pod MediaLB 3-Pin HS: Added new section
UM_MediaLB_Analyzer_Hardware _Manual_V02_00_XX-2	Dec. 2008	All	Reworked document:
		Section 4.3	Active-Pod MediaLB 6-Pin HS: Added new section
UM_MediaLB_Analyzer_Hardware _Manual_V02_00_XX-1	June 2008	-	First version

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Notes:

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Notes:

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